

GBG - WT E/ME/A - WT A/FE

Office Products Division  
Customer Engineering

**Office Products**

**Plant Customer Engineering**

**VIDEO SUPPLEMENT**

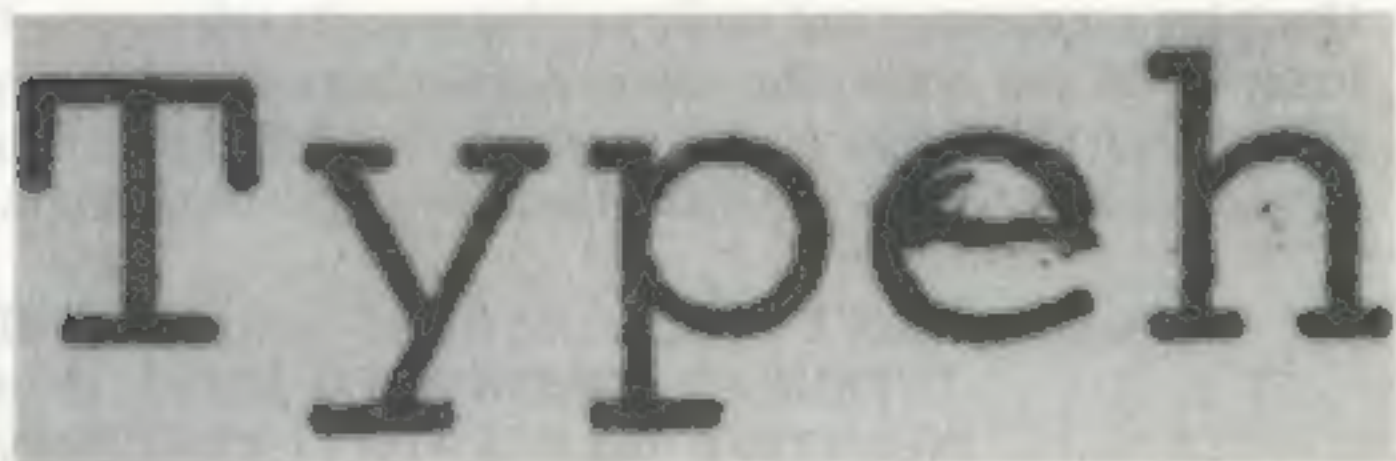
**8/9xx**

**Print Quality**



## CENTERFIL

This is when a character with a closed area either fills partially or completely with ink. The usual causes are faulty ribbon, ribbon being used not suitable for application, or dirty typehead.

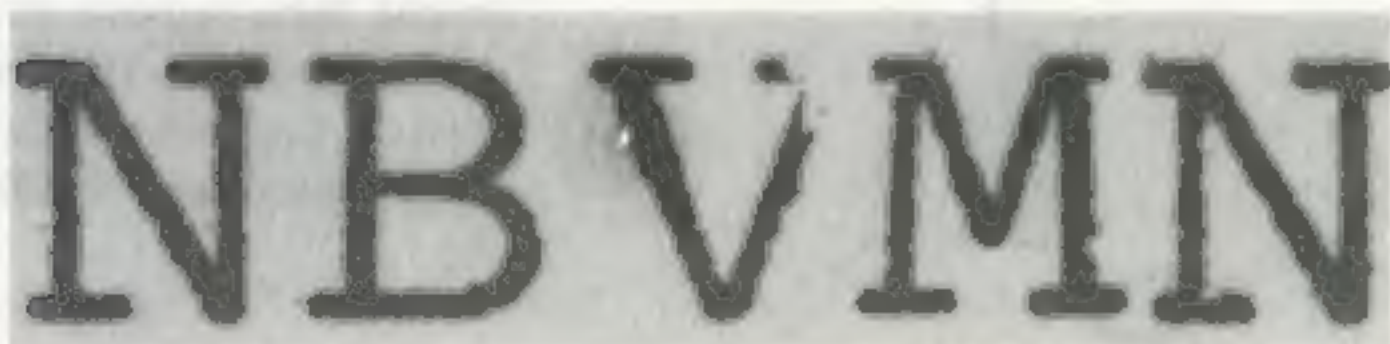


Solutions to this problem are:

- Clean or replace typehead
- Check quality of ribbon and "use prior to date"
- Check powered and free flight
- Rotate and tilt detent — minimum play no binds.

## COVERAGE

The usual reason for poor coverage is that the impression is too low or something has contacted the ribbon surface, removing the ink from the tape. Increasing the impression above a certain level will not improve coverage.



Other causes for poor coverage are:

- Poor ribbon quality
- Incorrect stick shift position
- Incorrect multi copy control lever position
- Cycle clutch adjustment
- Powered and free flight adjustments
- Print cam follower stop screw (APM frame 195)
- Drive belt tension

## HORIZONTAL MISALIGNMENT

Horizontal misalignment problems can be caused by:

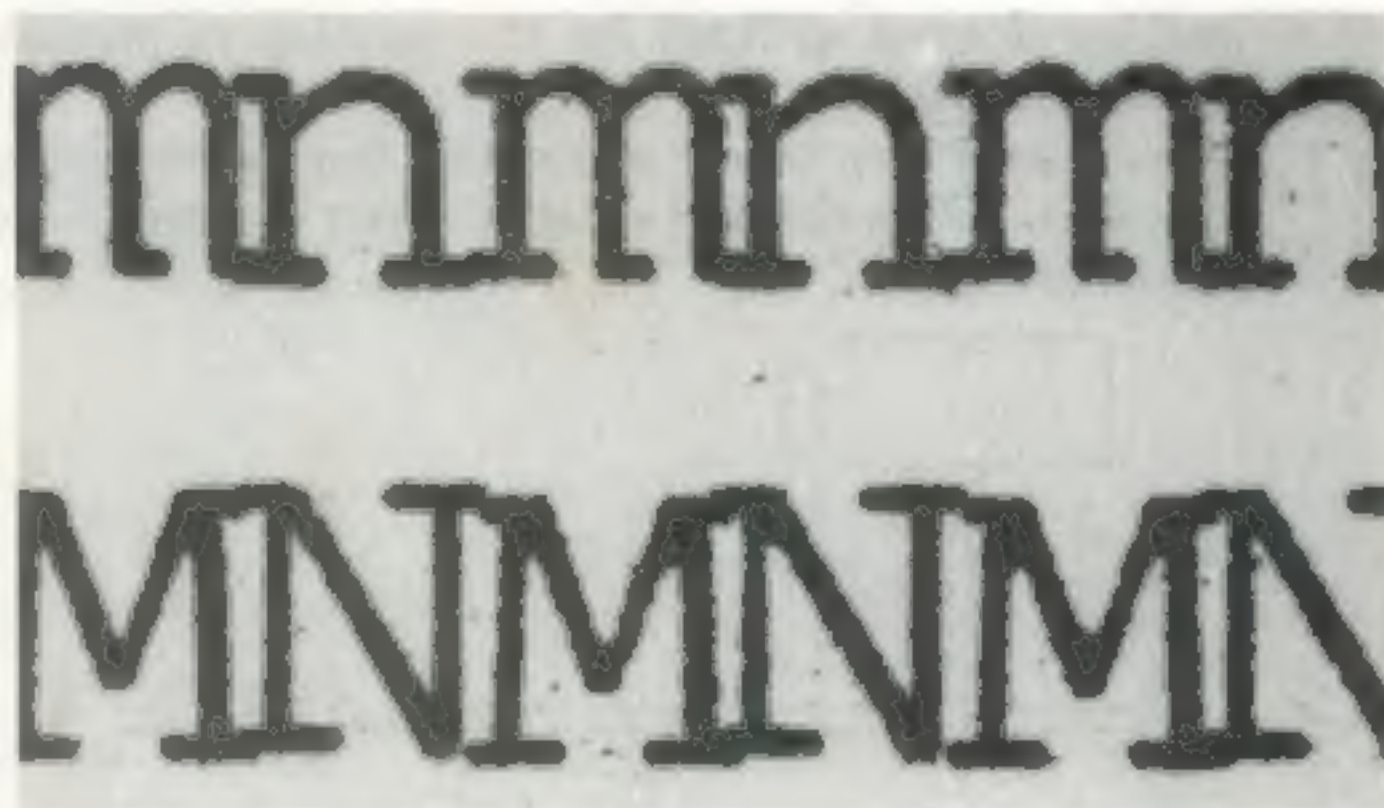
- All rotate position adjustments
- Binds in the typehead positioning system, (rotate and tilt)
- Rotate spring tension incorrect
- Play or binds in detent guides
- Detent timing incorrect
- Binds between typehead and tilt ring nose (chrome worn)
- Binds between upper ball socket and tilt ring (shims too thin)
- Escapement timing incorrect



## VERTICAL MISALIGNMENT

Vertical misalignment problems can be caused by:

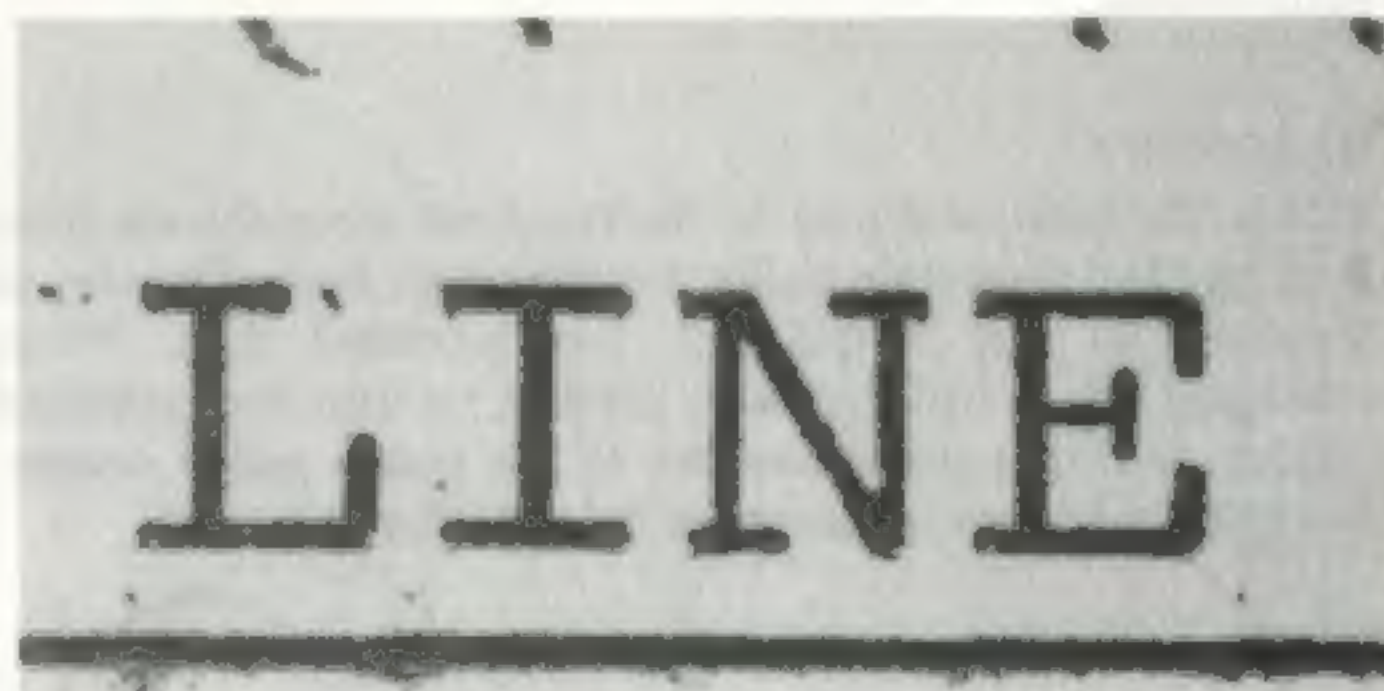
- Dirt on the upper ball socket flange
- Faulty typehead
- Play between typehead and tilt ring (socket worn)
- Play between upper ball socket and tilt ring
- Incorrect tilt detent adjustment
- Detent cam follower adjustment (see CEM 292)
- Tilt ring nose worn (see later section of this publication)



## SMEARING & SPLASHING

This is the uncontrolled extra ink transfer in any direction on the paper.

Reason for smearing is that just after printing the element, ribbon and paper stay in contact but the element and ribbon move together on the paper.



The probable causes are:

- Print shaft timing
- Escapement timing
- Weak bias spring in tilt ring (see CEM 292)
- Platen adjustments
- Yoke adjustments
- Excessive play in the stud mounting, the detent cam follower can cause smear because the detent timing changes.
- Detent cam follower adjustment (see CEM 292)
- Powered and free flight
- Print cam follower stop screw (APM frame 195)
- Check separator wire adjustment



## TIMING

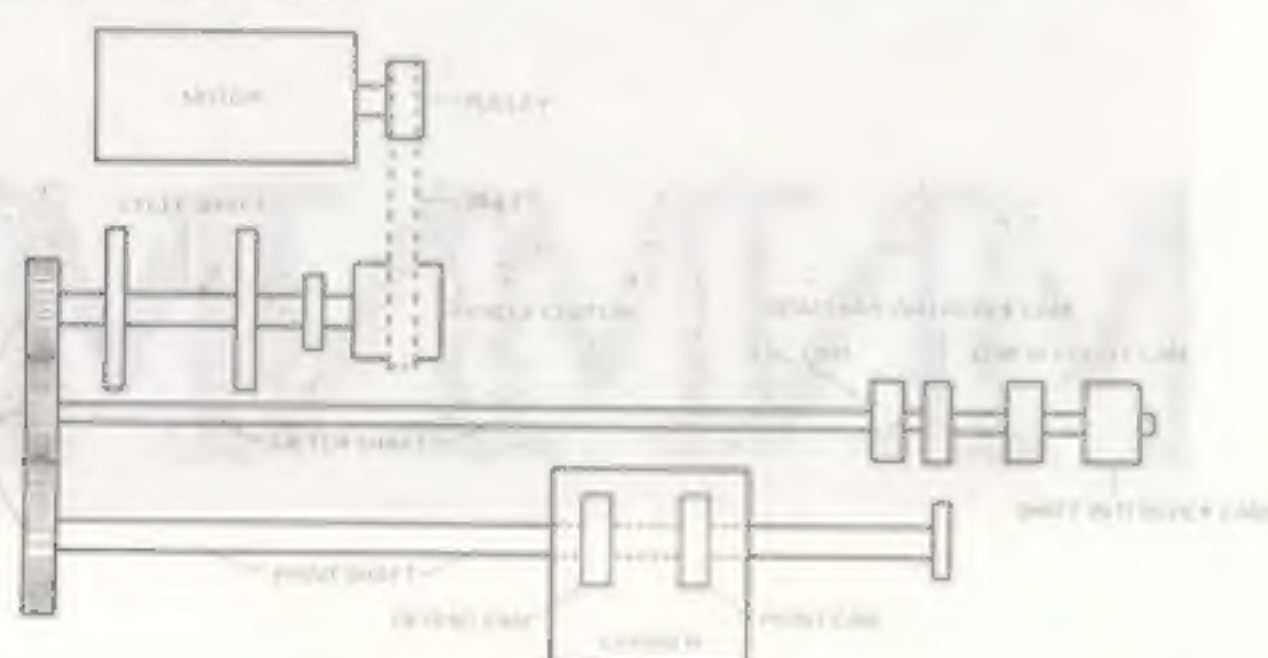
The correct adjustment of all these areas is necessary for correct machine timing. The conditions desired are:

To get correct power and speed from all moving parts.  
To get the detent notches (for the selected character) positioned correctly over the detents before they start moving into the notches.

To get the typehead securely locked by the detents before and during the print moment

The time in which the machine has to maintain this condition is very short, any excessive play will make it difficult to control the timing. Any binds will cause a loss of power and any wrong rotational adjustment of shafts, cams or gears will cause this time to be shorter making it more difficult for the machine to produce good print quality.

Always check that power and timing from the motor to the print shaft is correct before you start working in the carrier and rocker.



This system is designed to function with correct parts **Only**

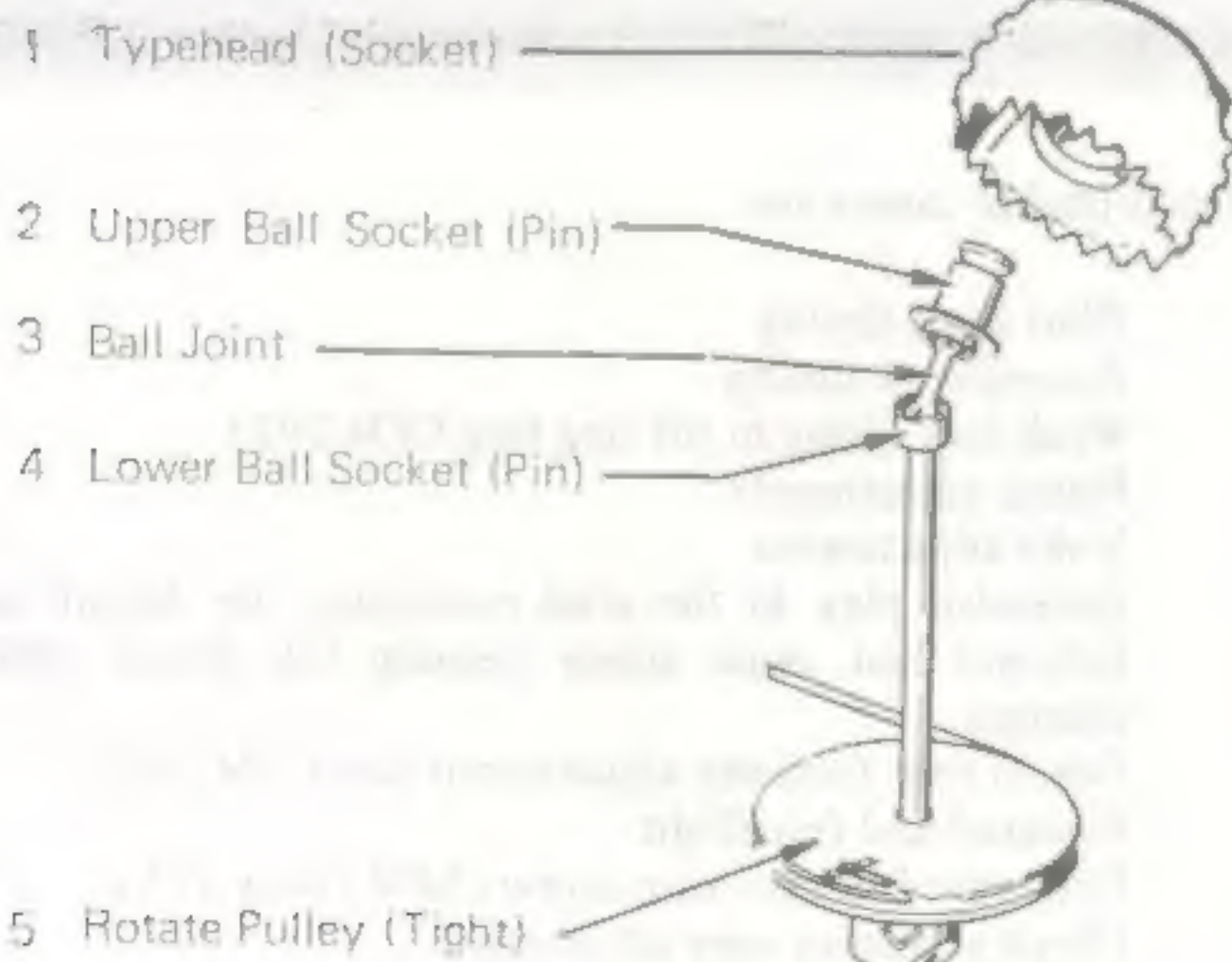
**Don't cut springs short**

**Don't mal adjust** (if you believe that this is necessary it shows that something else is wrong)

**Don't perform any action other than mentioned in CE Publications.**

## HEADPLAY

This is the rotational play in the typehead when the machine is at rest and the rotate pulley is tight on its shaft. The play is measured at the outside of the typehead skirt. When checking, use as little force as possible to turn the typehead making sure that **no movement of the rotate pulley occurs**. Headplay tolerance is controlled by the following parts.



If experiencing incorrect headplay check parts in the order mentioned above.

**Headplay cannot be adjusted it is caused by parts tolerances.**

Headplay is necessary and is allowed between its tolerances. If headplay is too small, the rotate adjustments become very critical and after wear in the system, the drift will create wrong positions of the typehead teeth over the rotate detent.

**Note: DRIFT WILL ALWAYS CAUSE THE TYPEHEAD POSITION TO MOVE IN A NEGATIVE (CLOCKWISE) DIRECTION.**

To check for correct headplay use following:

Half-cycle a character.

Withdraw rotate detent

Remove typehead play in negative (clockwise) direction

The notch to detent position should be as shown in figure 1. This condition must be correctly adjusted before continuing the check.



Figure 1

Withdraw the rotate detent then remove the typehead play in the positive (counter-clockwise) direction (APM 66)



Figure 2

Remove play in clockwise direction. This position of the detent on the slope indicates the minimum headplay allowed.

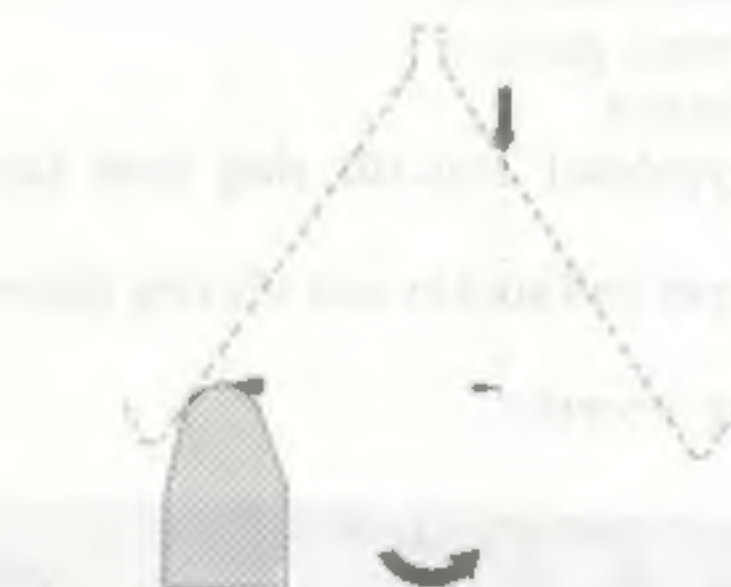


Figure 3

Too much headplay is indicated when the detent is further down the notch than as shown in figure 3



## DETENT ENTRY

Rotate detent should enter the notch on the right hand side of the notch for every rotate position. This is necessary so that under power the typehead moves the rotate detent towards the tilt ring and not against it's guide. The slight difference in entry position between different rotate positions is allowed and is called **BANDWIDTH**.



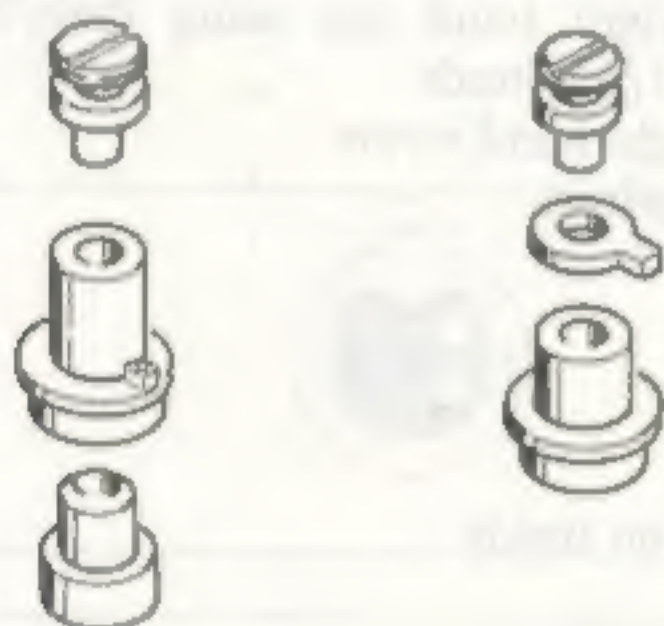
Rotate Detent Enter The Notch On The Right Hand Side Of Typehead

(Rear View)

## RETAINER SCREWS

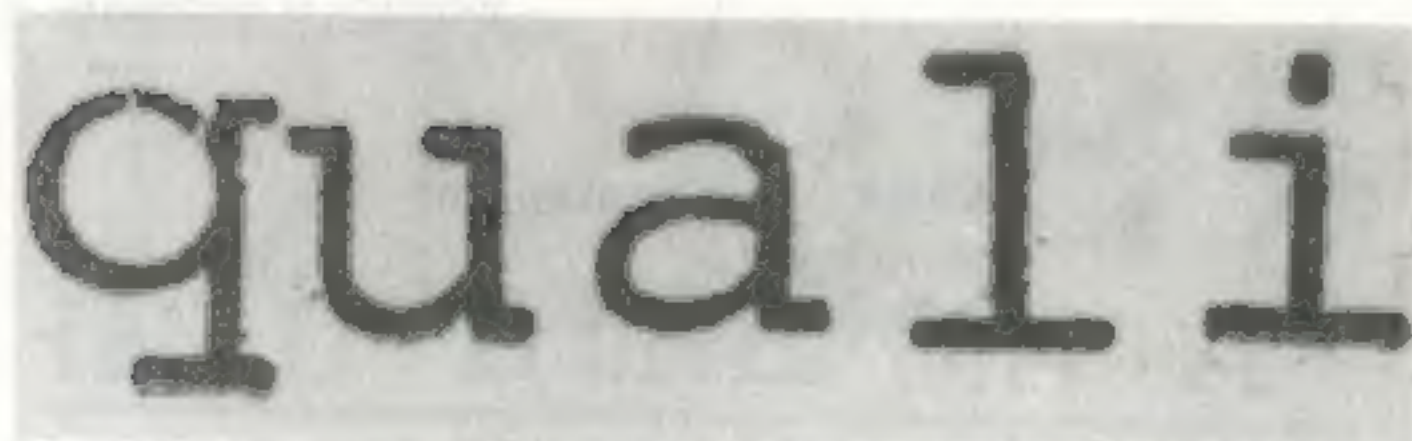
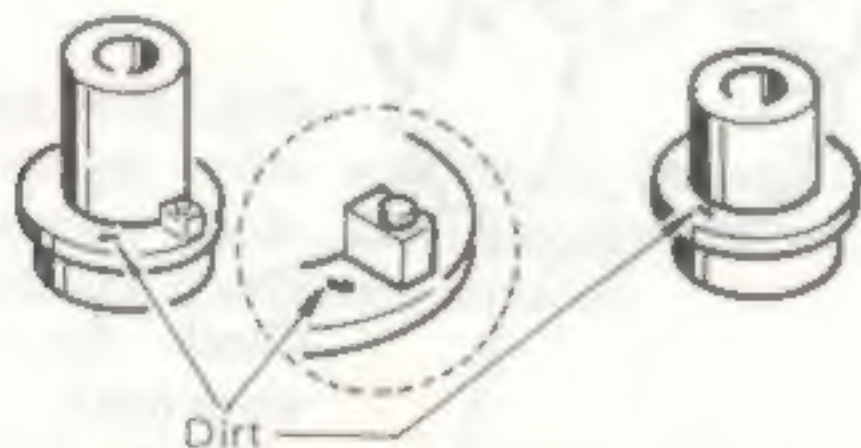
Don't overtighten, to cure the screw coming loose, only finger tips should be used (see CEM 292).

Reasons for coming loose see the Broken Tapes Check page 4 APM 241-5939



## UPPER BALL SOCKET FLANGE

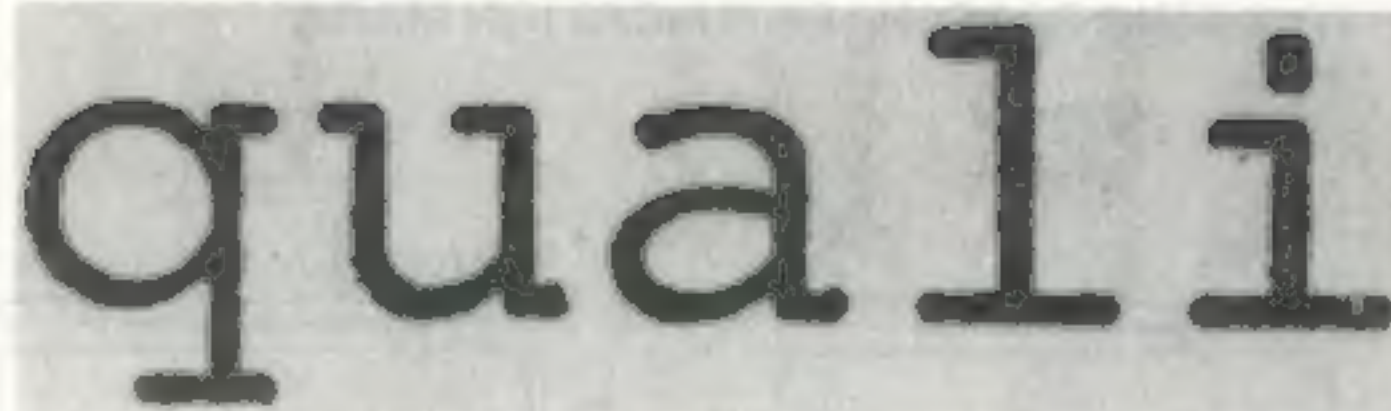
This area must be clean and lubricated. Check this area for dirt or chrome from the typehead. If chrome is found check the typehead and replace if necessary.



Print Sample With Dirt (Vertical Misalignment)

If chrome is found check the typehead and replace if necessary.

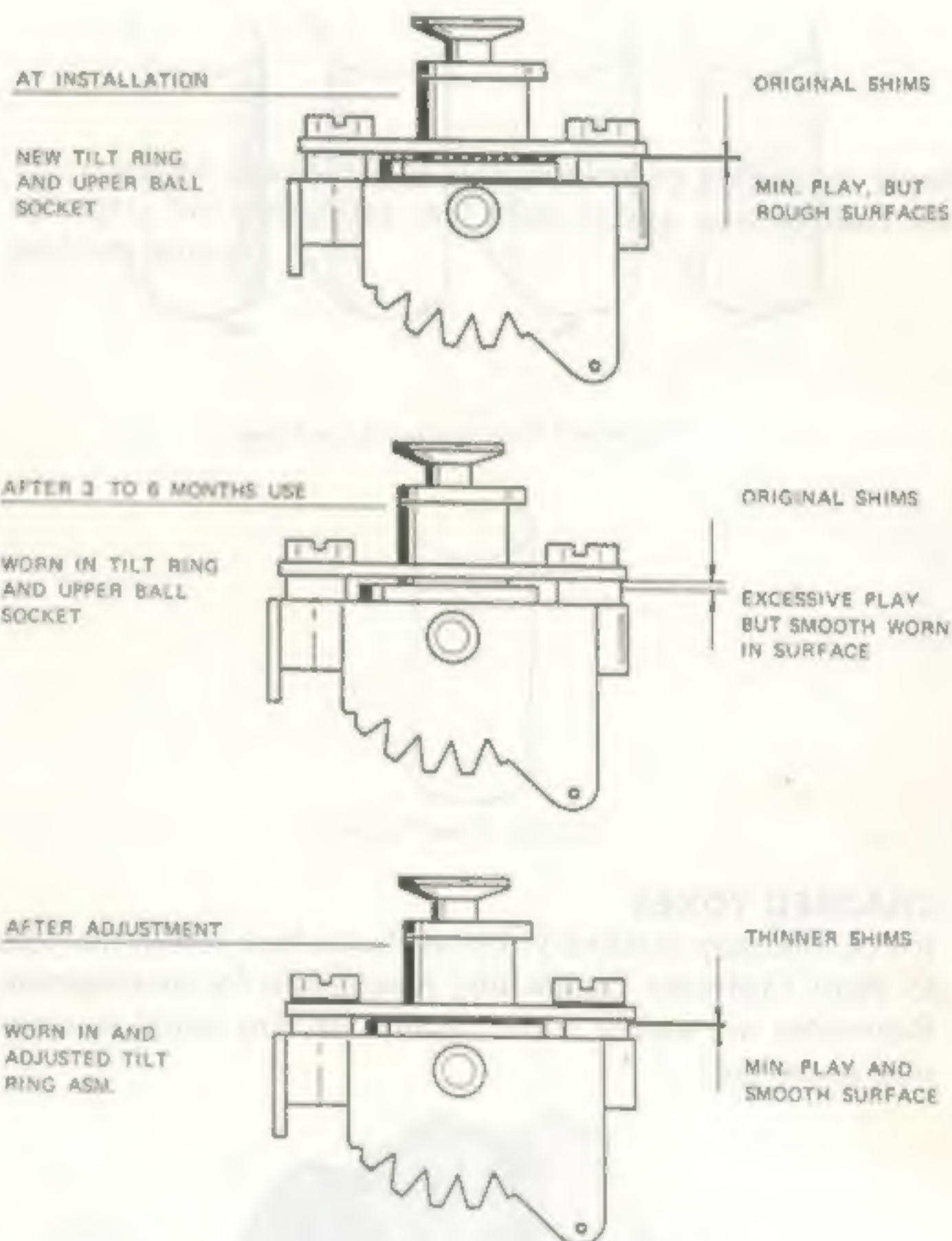
IBM INTERNAL USE ONLY



Print Sample After Removing Dirt

## UPPER BALL SOCKET AND TILT RING

A new tilt ring assembly takes some time to "wear in". For this reason if excessive upper ball socket play is found the tilt ring should be reshimmed and not replaced. Replacing the assembly only cures the problem for a short time until wear once again takes place (see diagram).



To ensure that you do not create a bind after reshimming. Perform the following:

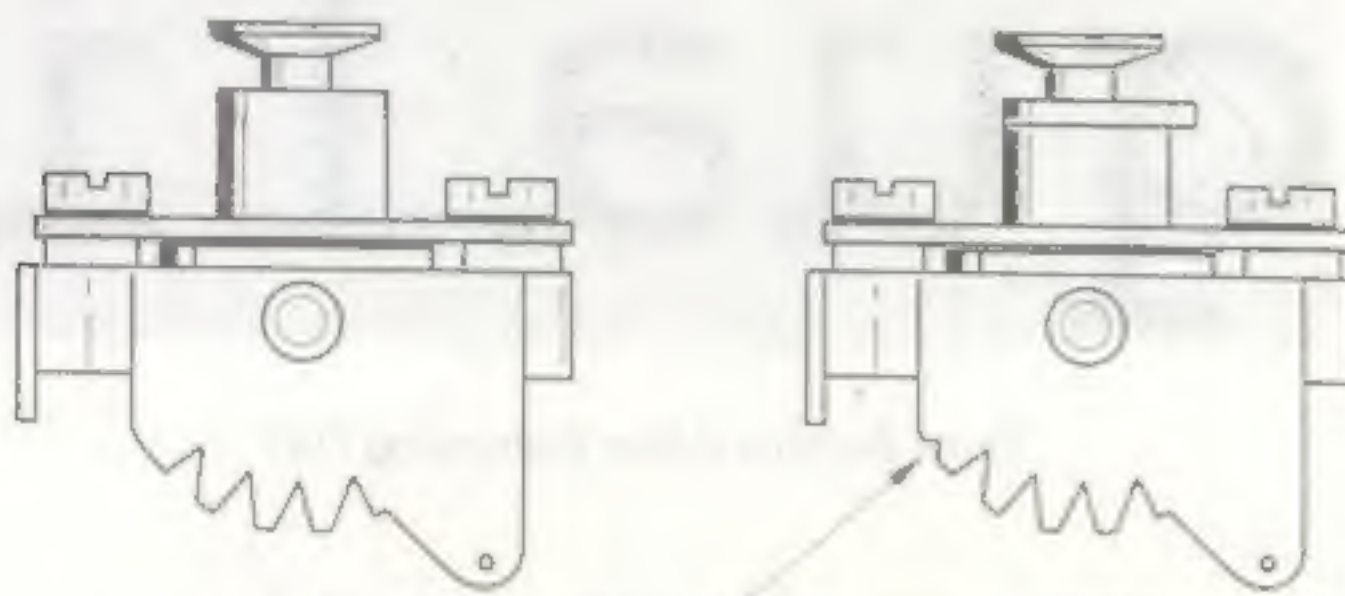
Half cycle a negative 5 character note where the rotate detent touches the slope of the notch at entry.

After reshimming — half cycle a negative 5 character again, the rotate detent should touch the slope of the notch at the same point as before. If not a bind has been created and the upper ball socket needs shiming again.

Do not increase the rotate spring tension to overcome binds.



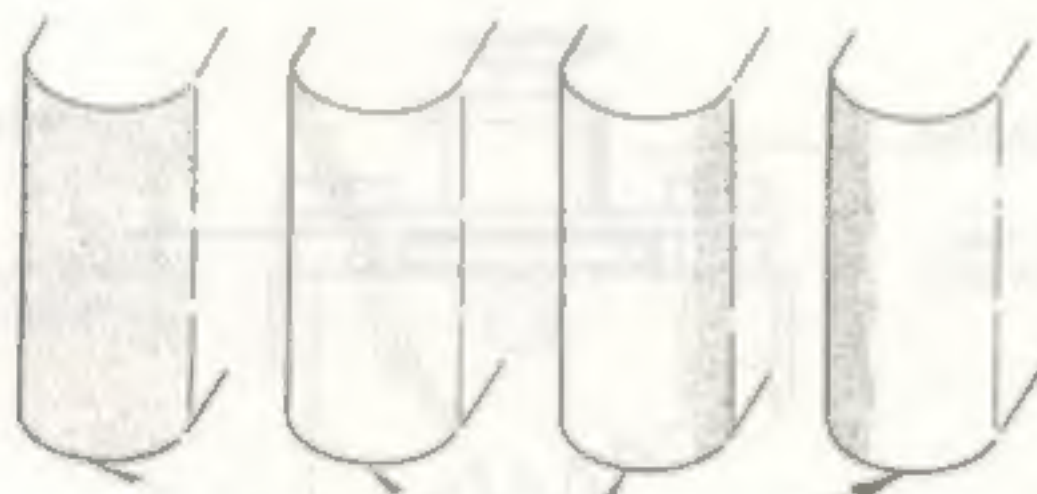
## TILT RING BASE IDENTIFICATION MARK



88 Char. Identification Notch 96 Char.  
Two Types Of Tilt Rings  
Not Interchangeable

## WEAR PATTERNS ON TILT RING NOSE

If the chrome surface of the typehead is found to be worn on the inside check the tilt ring nose for a wear pattern caused by the rough surface of the typehead.



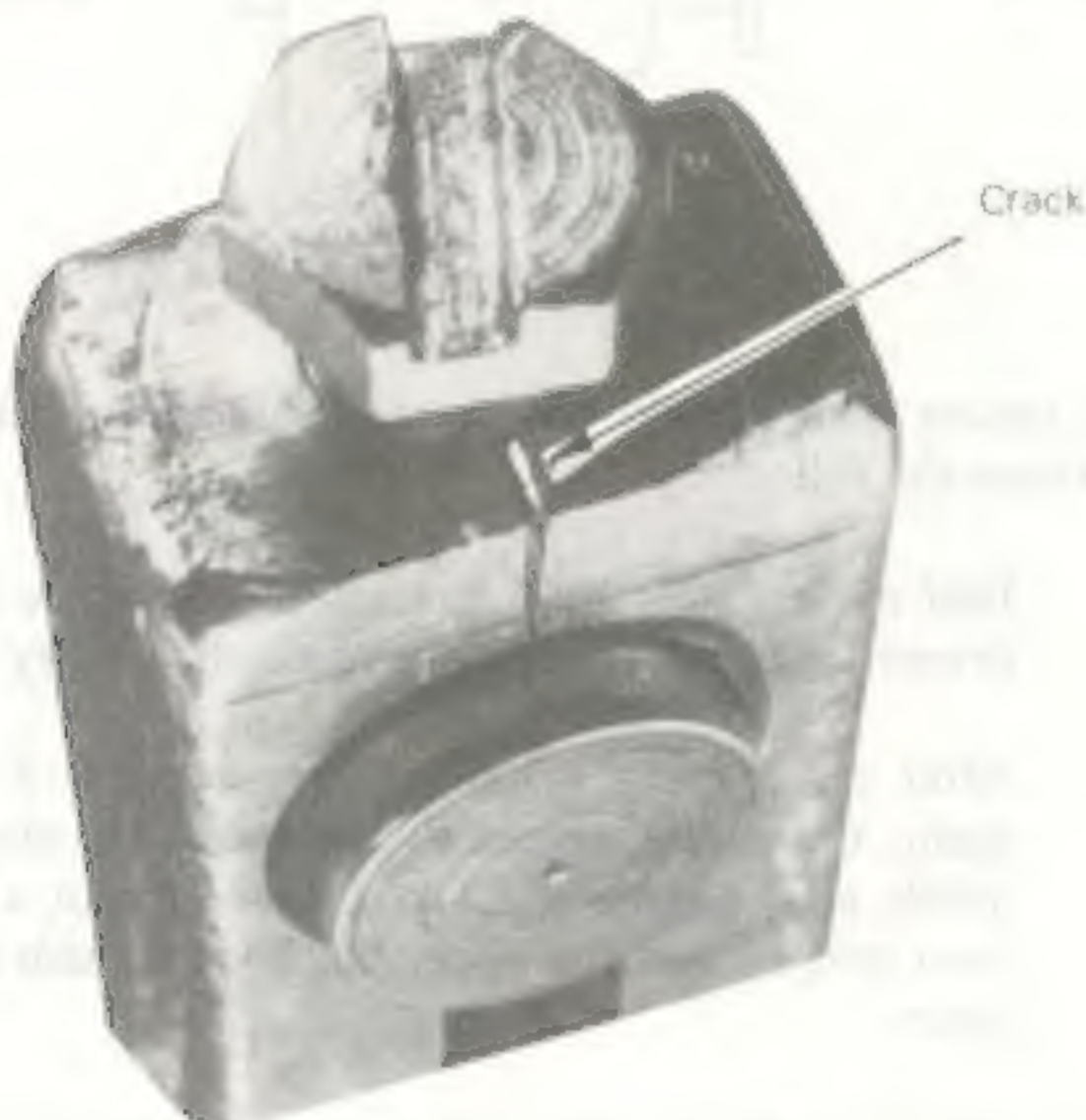
Incorrect Wear Patterns On Nose



Correct Wear Pattern

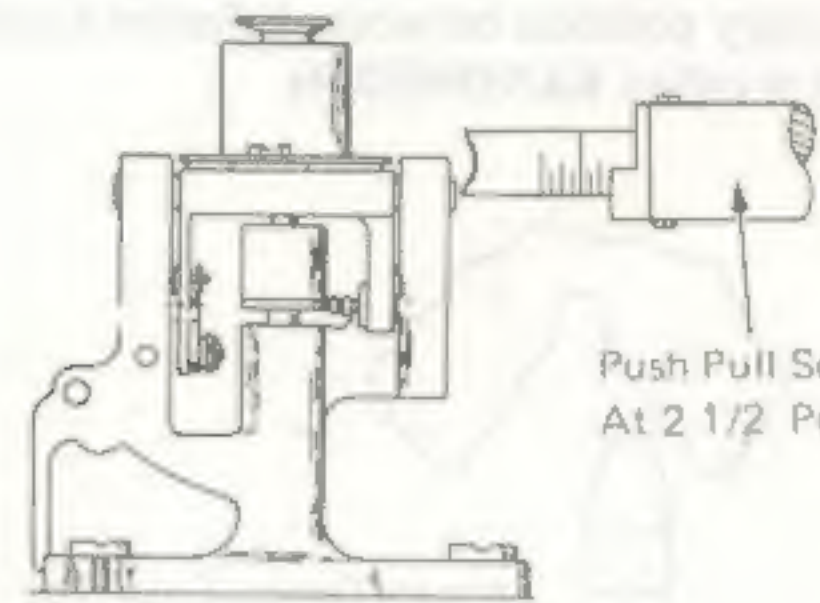
## CRACKED YOKES

If you find any cracked yokes as shown here return the yoke to Plant Customer Engineering Amsterdam for investigation. Remember to supply some details Machine serial number, time in use etc.



## PRELOAD

To ensure good print quality a certain preload on the tilt ring is necessary



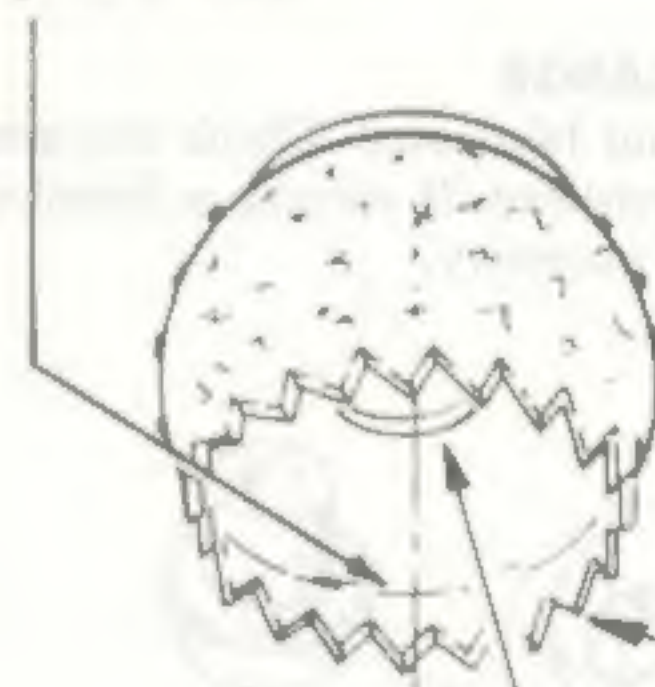
Push Pull Scale  
At 2 1/2 Pounds

## Method to be used:

- Position carrier at left hand margin
- Remove rotate detent spring
- Remove tilt pulley spring
- Loosen the pivot pins locking screws
- Turn pins 1/4 turn in their holes
- Centre tilt ring between yoke legs
- Tighten left hand screw only
- Push in right hand pin using Push/Pull Scale until reading 2 1/2 pounds
- Tighten right hand screw
- Replace springs

## TYPEHEAD

Check for wear on inside surface  
— Replace if worn—



Check for broken or worn teeth.  
— Replace if necessary —

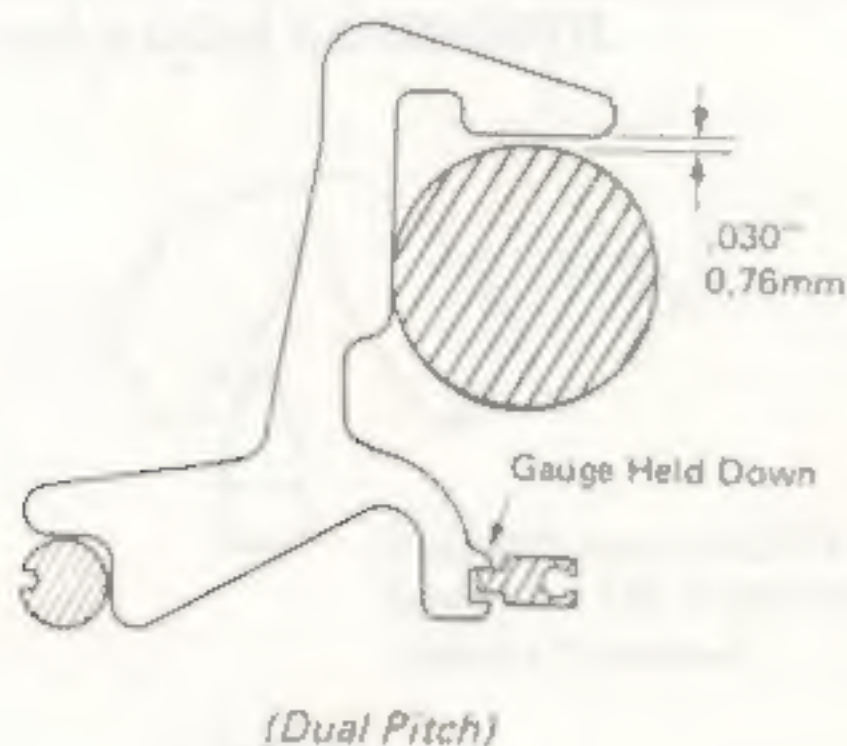
Check for broken or worn insert  
— Replace if necessary —

**CLEAN, INSPECT AND LUBRICATE THE TYPEHEAD**  
during each customer visit.

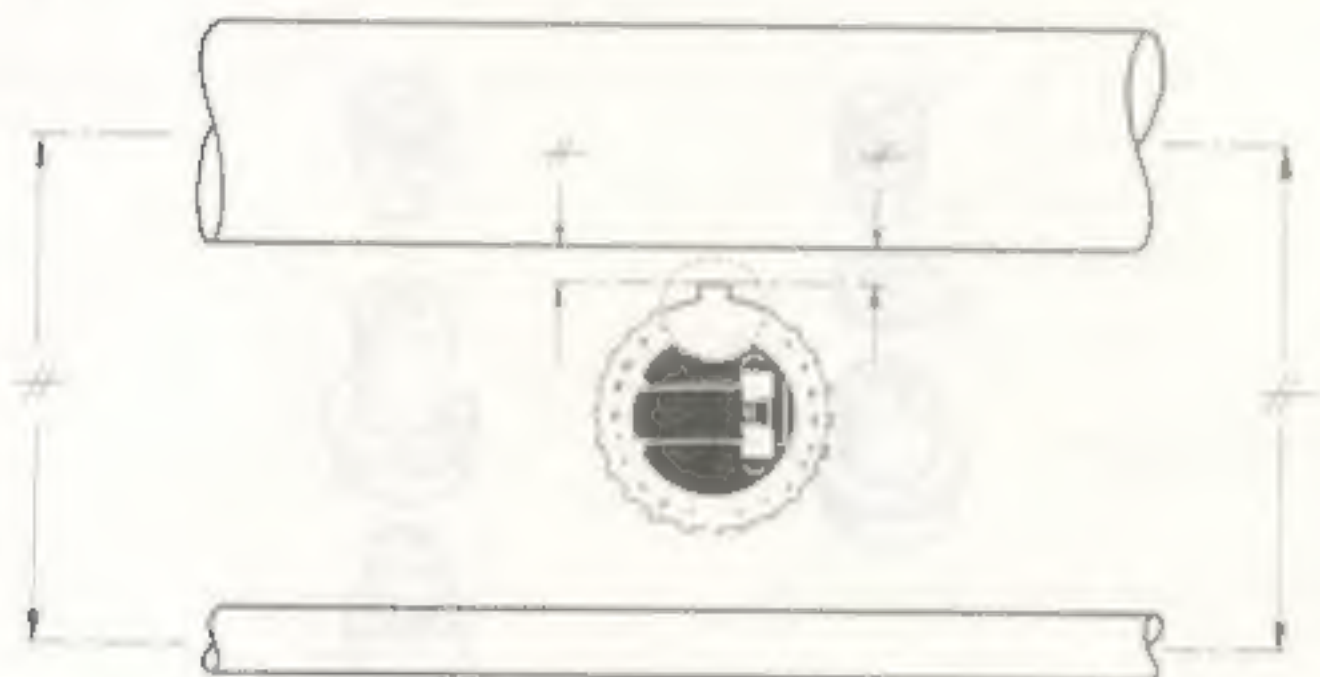


## PLATEN POSITION

Platen position should be correct before ANY print adjustment are made.



The yoke adjustment can also affect the parallel position of typehead to platen.

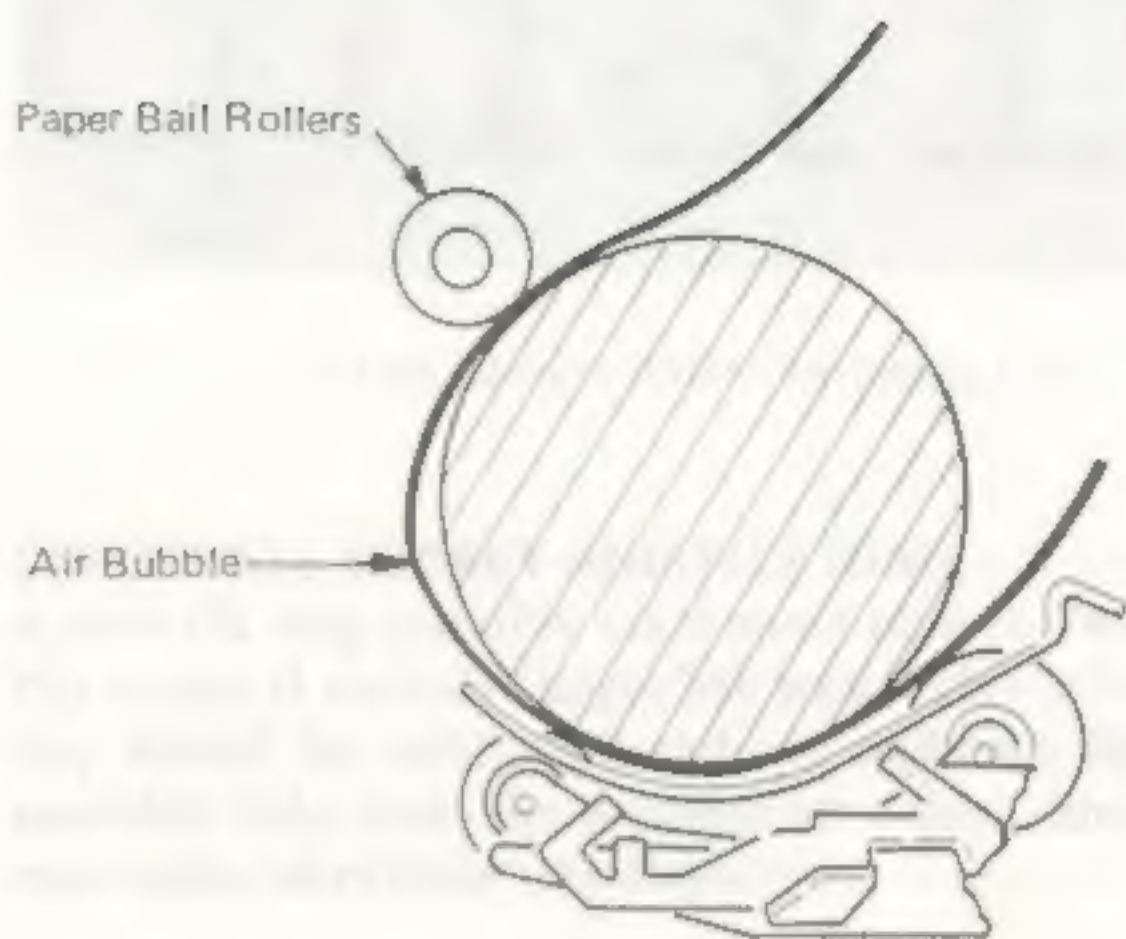


Check platen condition — it should be clean without any marks.

## PAPER BAIL ROLLERS

The print sample below was caused because the paperbail rollers were dirty inside. The rollers should be removed and cleaned inside and if necessary replaced.

HEAD LINE IN A



The operator usually solves this problem by pulling the paper up tight, but complains that after typing several lines the problem returns.